

***Monilonema ochetocephala* sp. n. (Nematoda, Strongyloidea)
from macropodid marsupials in eastern Australia**

by Ian BEVERIDGE

Abstract. — *Monilonema ochetocephala* sp. n. (Nematoda, Strongyloidea) is described from the stomach of *Macropus dorsalis* (Gray, 1837) (type host) and *Wallabia bicolor* (Desmarest, 1804) (Marsupialia, Macropodidae) from Queensland and New South Wales, Australia. It is distinguished from the other species in the genus by the lack of a cervical collar, eight leaf crown elements, shorter spicules, the lack of sclerotised bosses on the internal surface of the bursa and the lack of a gubernaculum.

Résumé. — *Monilonema ochetocephala* sp. n. (Nematoda, Strongyloidea) parasite de l'estomac de *Macropus dorsalis* (Gray, 1837) (hôte-type) et *Wallabia bicolor* (Desmarest, 1804) (Marsupialia, Macropodidae) du Queensland et de Nouvelle-Galles du Sud, Australie, est décrit. La nouvelle espèce se distingue de l'autre espèce du genre par l'absence de collier cervical, la présence de huit éléments dans la coronule, les spicules plus courts, l'absence de bosses sclérotisées sur la surface de la bourse caudale et l'absence de gubernaculum.

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The monotypic genus *Monilonema* Beveridge & Johnson, 1981, was created to accommodate an unusual species of nematode from the stomach of pademelons, *Thylogale stigmatica* Gould, 1860, from Queensland, characterised by the presence of a pair of tube-like structures on either side of the buccal capsule and oesophagus. In collections of parasites of *Macropus dorsalis* and *Wallabia bicolor* made more recently, a second species of the same genus was encountered. The new species is described in this paper.

Specimens examined have been deposited in the collections of the South Australian Museum, Adelaide (SAM), the Muséum national d'Histoire naturelle, Paris (MNHN), the Australian Helminthological Collection, Adelaide (AHC), and the C.S.I.R.O. Division of Wildlife and Rangelands Research, Canberra (WL). Measurements given in the text are in millimetres as the range from five specimens followed by the mean in parentheses.

***Monilonema ochetocephala* sp. n.**

(Fig. 1)

TYPES : Holotype ♂, allotype ♀, from stomach of *Macropus dorsalis* (Gray, 1837), Harvest Home Station via Charters Towers, Queensland, coll. 3.III.1983 by R. SPEARE, in SAM nos V3578, 3579. Paratypes, same data, 2 ♂, 2 ♀, in SAM nos V3580-3583 ; 3 ♂, 3 ♀, in MNHN no 532 HD ; 10 ♂, 12 ♀, in AHC nos 13462-13466.

MATERIAL EXAMINED : From *Macropus dorsalis* : Queensland, types ; 4 ♂, 3 ♀, Pallamana Station via Charters Towers, 28.III.1983, R. SPEARE (AHC 13488) ; 1 ♀, Warrawee Station via Charters Towers, 3.VIII.1982, coll. R. SPEARE ; 1 ♀, Mt Surprise, 18.XI.1980, coll. P. M. JOHNSON (AHC 8320). — From *Wallabia bicolor* : Queensland, 1 ♀, Mt Surprise, 13.X.1977, coll. P. M. JOHNSON (AHC 7362) ; New South Wales, 2 ♂, 3 ♀, Timbillica State Forest, 1.IV.1982, coll. P. HAYCOCK and D. M. SPRATT (WL N1566).

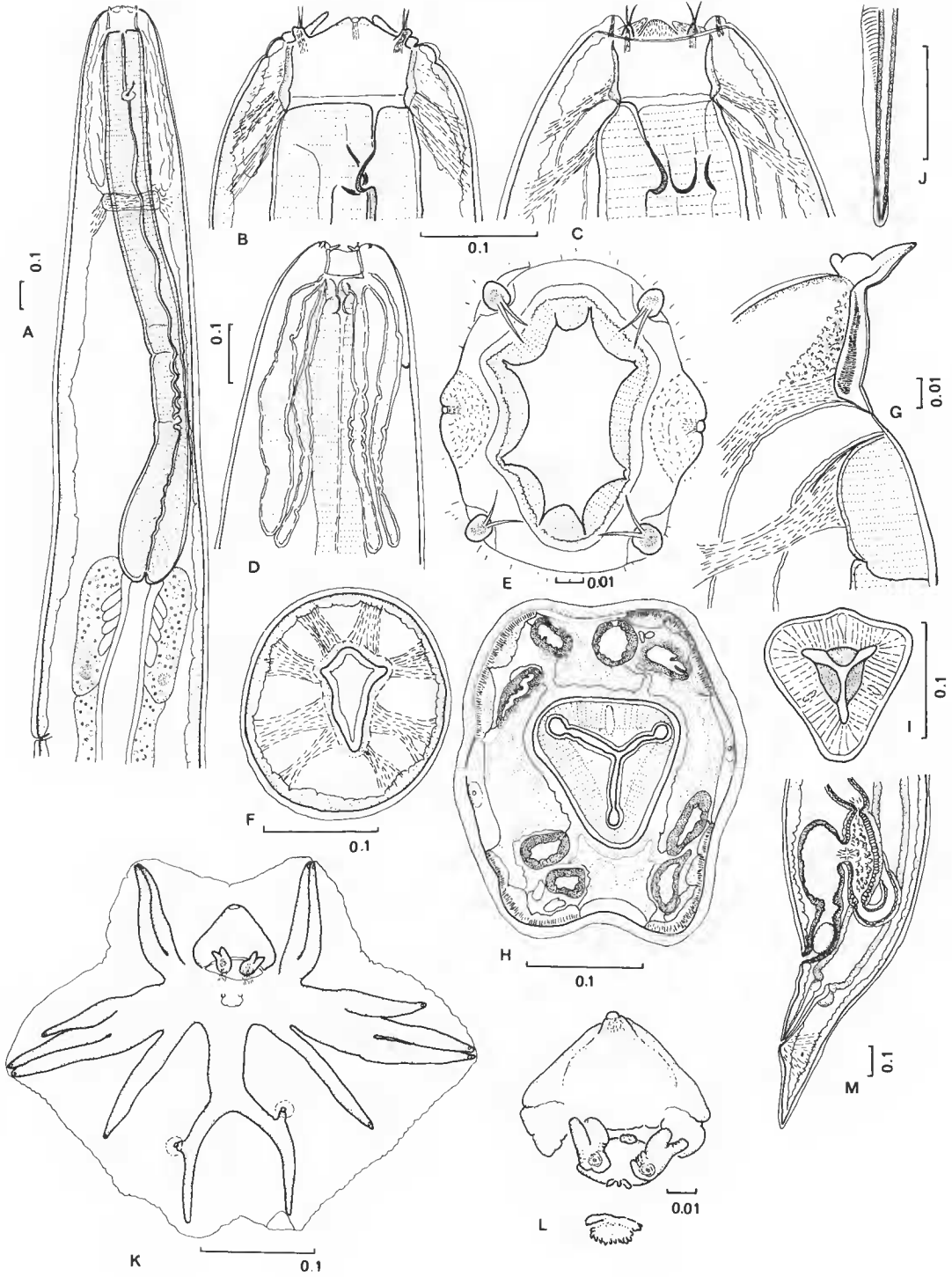
LOCATION IN HOST : Stomach.

DESCRIPTION

Robust nematodes ; body covered with numerous fine, regularly-arranged transverse striations ; mouth opening small, dorsoventrally elongate ; cephalic collar very narrow, bearing 2 large, lateral amphids on dome-shaped projections, and 4 conical submedian papillae, each with 2 long setae ; labial crown of 8 dissimilar elements, each faintly striated ; posterior margin of elements continuous with internal lining of buccal capsule ; anterior surface continuous with cephalic collar ; lateral elements of crown largest ; submedian elements intermediate in size ; dorsal and ventral elements small. Buccal capsule wider than long, dorsoventrally elongate, straight sided in lateral and median views ; wall of buccal capsule poorly sclerotised, thickened towards base but without distinct annulus ; internal layer of buccal capsule wall thick, transparent, faintly striated ; outer part of wall thick, opaque, non-sclerotised ; buccal capsule approximately quadrilateral in transverse section, kite-shaped, with dorsolateral borders shorter than ventrolateral borders ; 8 prominent muscle bands run from somatic musculature to attach to external thickening at base of buccal capsule, 2 dorsal, 2 subventral, 2 left lateral, 2 right lateral ; junction of buccal capsule with oesophagus membranous ; cavity present external to membrane encircling junction of capsule with oesophagus, giving rise posteriorly to 8 narrow blind sacs which pass posteriorly to level of nerve ring in 4 submedian pairs ; lumina of sacs of irregular internal diameter. Oesophageal corpus long, cylindrical ; anterior extremity of corpus attached to somatic muscles by 8 muscle bands ; lining of anterior end of corpus with 3 sclerotised lappets ; oesophageal bulb elongate, clavate, lining not sclerotised ; anterior extremity of intestine moderately thickened with enlarged intestinal cells ; nerve ring in anterior oesophageal region ; deirids anterior to nerve ring ; excretory pore variable in position, extending from region of oesophageal bulb to anterior intestinal region.

Male : Length 8.0-9.4(8.8) ; width 0.58-0.65(0.61) ; buccal capsule 0.05-0.06(0.06) × 0.08-0.12(0.10) ; oesophagus 2.05-2.51(2.27) ; nerve ring to anterior end 0.65-0.80(0.71) ; excretory pore to anterior end 2.05-2.40(2.22) ; deirids to anterior end 0.25-0.30(0.27) ; spicules 1.60-1.80(1.73). Dorsal lobe of bursa equivalent in length to lateral lobes, barely

FIG. 1. — *Monilonema ochetocephala* sp. n. : A, oesophageal region, lateral view ; B, cephalic extremity, lateral view ; C, cephalic extremity, dorsal view ; D, cephalic extremity of dissected specimen, showing canals, dorsal view ; E, mouth opening, apical view ; F, optical transverse section through buccal capsule showing musculature ; G, optical longitudinal section through wall of buccal capsule showing detail of buccal capsule wall, musculature and origin of canal ; H, transverse section through anterior oesophagus showing four pairs of canals ; I, transverse section through anterior extremity of oesophagus showing sclerotised lappets ; J, spicule tip, lateral view ; K, bursa, apical view ; L, genital cone, dorsal view ; M, female tail, lateral view. (Scale lines in mm.)



separated from them ; ventral lobes joined ventrally ; internal surface of bursa covered with striae ; sclerotised bosses absent. Ventral rays apposed, reach margin of bursa ; posterolateral and mediolateral rays apposed, reach margin of bursa ; externolateral ray shorter, divergent, does not reach margin of bursa ; externodorsal ray slender, arises close to lateral trunk ; dorsal ray slender at origin, divides at mid-length ; branches slender, do not reach margin of bursa ; lateral branches very short, arise close to main bifurcation, terminate in short, dome shaped elevations on internal surface of bursa. Anterior lip of genital cone prominent, with single terminal papilla ; posterior lip with 2 prominent bifid projections, a tiny dome shaped projection on ventral aspect of lip, and a tiny median bifid projection on dorsal surface ; extra tumescent projection present dorsal to genital cone. Spicules elongate, alate ; alae transversely striated ; spicule tips simple, blunt ; ala diminishes gradually in width towards spicule tip ; gubernaculum absent ; central cordate and 2 lateral elongate thickenings of spicule sheaths present.

Female : Length 10.6-14.7(13.7) ; width 0.70-0.89(0.76) ; buccal capsule 0.07-0.10 (0.07) ; oesophagus 2.50-3.11(2.83) ; nerve ring to anterior end 0.70-0.85(0.79) ; deirids to anterior end 0.25-0.40(0.31) ; excretory pore to anterior end 2.82-3.80(3.27) ; tail 0.27-0.34 (0.31) ; vulva to posterior end 0.48-0.71(0.62) ; vagina vera 0.55-0.70(0.62) ; egg 0.14-0.19 (0.16) \times 0.05-0.08(0.07). Tail short, conical ; vulva immediately anterior to anus ; vagina vera short, straight, broad anteriorly ; vestibule longitudinally disposed ; egg ellipsoidal.

DISCUSSION

The nematode species described above clearly belongs within the genus *Monilonema* since it possesses a poorly sclerotised buccal capsule supported externally by a system of muscles, a labial crown and a series of canals extending from the posterior margin of the buccal capsule to the level of the nerve ring.

M. ochetocephala sp. n. differs from the only other species in the genus, *M. lacunosa* Beveridge & Johnson, 1981, in the following series of characters :

- a) lack of a distinct cervical collar ;
- b) eight elements in the labial crown compared with about twenty in *M. lacunosa* ;
- c) lack of a pronounced cavity surrounding the entire buccal capsule region ;
- d) absence of sclerotised bosses on the internal surface of the bursa which are present in *M. lacunosa* ;
- e) absence of a gubernaculum ;
- f) spicules (1.60-1.80 mm) shorter than in *M. lacunosa* (2.00-2.15 mm) ;
- g) vagina vera of female (0.35-0.70 mm) shorter than in *M. lacunosa* (1.05-1.25 mm).

The description of the new species necessitates minor modifications to the generic definition given by BEVERIDGE and JOHNSON (1981). The presence of a cervical collar, the presence of sclerotised bosses on the internal surface of the bursa and the presence of a gubernaculum are clearly specific rather than generic characters and should be removed from the generic definition. The corona of petal like elements surrounding the mouth opening is considered to be a labial crown, using the terminology of BEVERIDGE (1982), and the num-

ber of elements is an important specific character. A labial crown also occurs in the related tribe Pharyngostromylinea Popova, 1952, but the structures in *Monilonema* have probably evolved in parallel with those in the Pharyngostromylinea rather than being directly related. Finally, the paired canals which extend from the buccal capsule to the nerve ring may vary in number between species.

The most striking character of the new species and indeed of the genus is the presence of paired canals which originate between the buccal capsule and the oesophagus and which extend posteriorly to the level of the nerve ring. In *M. ochetocephala*, the canals originate in four pairs and lie initially in the sectors between one of the lateral muscle bands and either a dorsal or ventral muscle band. The canals make no apparent connection with the lumen of the buccal capsule and appear to be complex outpocketings of the connective tissue running along the outer surface of the buccal capsule and oesophagus. Posterior to the level of the muscle bands connecting the anterior part of the oesophagus with the somatic muscles, the canals lie in pairs in the submedian positions, supported by connective tissue bands running to the oesophagus from the surrounding body wall. The canals terminate at the level of the nerve ring, but are apparently not connected to it. No indication of the function of the canals was gleaned from examinations either of serial hand cut sections or of serial histological sections, though the specimens were not sufficiently well preserved for detailed histological study.

The description of the new species provides additional information on the relationships of the genus within the tribe Macropostromylinea Lichtenfels, 1980. The presence of eight prominent muscle bands supporting a poorly sclerotised buccal capsule aligns *Monilonema* with the genera *Macropostromylylus* Yorke & Maplestone, 1926, *Alocostoma* Mawson, 1979, *Trigonostonema* Beveridge, 1981, and *Foliosstoma* Beveridge & Johnson, 1981. As important is the symmetry of the buccal capsule which is triangular in transverse section in *M. lacunosa*, and slightly modified in *M. ochetocephala* so that the dorsal margin is subdivided, forming a quadrilateral. In both species, the apex of the triangular or quadrilateral is ventral. Of the genera listed above, *Macropostromylylus*, *Alocostoma* and *Trigonostonema* also have a buccal capsule which is triangular in transverse section, or alternatively is modified from a triangular shape. *Monilonema* is distinguished from all of these genera in possessing a labial crown and the paired canals, but also differs from *Alocostoma* by the truncated shape of the cephalic papillae in the latter, from *Macropostromylylus* in lacking the modification of the anterior part of the buccal capsule into an eight lobed structure similar to the lips and from *Trigonostonema* in lacking a triangular mouth opening with a tiny leaf crown around the edge of the mouth opening.

M. ochetocephala is not uncommon in *Macropus dorsalis* in inland areas of northern Queensland but its distribution does not appear to be very uniform. It has been found near Mt Surprise and Charters Towers, but not further south in the vicinity of Rockhampton (unpublished observations). At Mt Surprise it has been found in *Wallabia bicolor* but not in any of the other macropodid species occurring at this locality or at Charters Towers. Its occurrence also in *W. bicolor* in New South Wales, some 2000 km south of the other collection sites suggests a somewhat disjunct distribution.

The specific name is derived from the Greek word *ochetos* (= canal), and refers to the canals present in the cephalic region of the nematode.

Acknowledgments

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REFERENCES

- BEVERIDGE, I., 1982. — A taxonomic revision of the Pharyngostromylinea Popova (Nematoda : Strongyloidea) from macropodid marsupials. *Aust. J. Zool.*, Suppl. Ser., no. 83 : 1-150.
- BEVERIDGE, I., and P. M. JOHNSON, 1981. — Three new genera of nematodes (Strongyloidea : Cloacininae) from the red-legged pademelon, *Thylogale stigmatica* Gould (Marsupialia : Macropodidae) from eastern Australia. *Syst. Parasitol.*, 3 : 77-89.